



GFS FY15Q1 implementation kickoff presentation

**EMC GCWMB
August 13, 2014**



Charter Overview



- This upgrade is planned for November, 2014
- System description
 - This is a change to the GDAS and GFS.
- What's being changed in the system
 - Model
 - T1534 Semi-Lagrangian (13 km)
 - Use of high resolution daily SST and sea ice analysis
 - Physics
 - Land Surface
 - Post Processor
 - Analysis upgrades
- Expected benefits to end users associated with upgrade
 - Upgrade in global modeling capability
 - Improvement in forecast skill
- This implementation will put GFS/GDAS into EE process.



Analysis Highlights

- Structure
 - T574 analysis for T1534 deterministic
 - Code optimization
- Observations
 - GPSRO enhancements – improve quality control
 - Updates to radiance assimilation
 - Assimilate SSM/IS UPP LAS and MetOp-B IASI radiances
 - CRTM v2.1.3
 - New enhanced radiance bias correction scheme
 - Additional satellite wind data – hourly GOES, EUMETSAT
- EnKF modifications
 - Stochastic physics in ensemble forecast
 - T574L64 EnKF ensembles



Model Highlights (1)

- T1534 Semi-Lagrangian (~13km)
- Use of high resolution daily SST and sea ice analysis
- High resolution until 10 days
- Dynamics and structure upgrades
 - Change from Lagrangian to Hermite interpolation in the vertical to reduce stratospheric temperature cold bias.
 - Restructured physics and dynamics restart fields and updated sigio library
 - Divergence damping in the stratosphere to reduce noise
 - Added a tracer fixer for maintaining global column ozone mass
 - Major effort to make code reproducible



Model Highlights (2)

- Physics upgrades
 - Radiation modifications -- McICA
 - Reduced drag coefficient at high wind speeds
 - Hybrid EDMF PBL scheme and TKE dissipative heating
 - Retuned ice and water cloud conversion rates, background diffusion of momentum and heat, orographic gravity-wave forcing and mountain block etc
 - Stationary convective gravity wave drag
 - Modified initialization to reduce a sharp decrease in cloud water in the first model time step
 - Correct a bug in the condensation calculation after the digital filter is applied



Model Highlights (3)

- Boundary condition input and output upgrades
 - Consistent diagnosis of snow accumulation in post and model
 - Compute and output frozen precipitation fraction
 - New blended snow analysis to reduce reliance on AFWA snow
 - Changes to treatment of lake ice to remove unfrozen lake in winter
 - Land Surface
 - Replace Bucket soil moisture climatology by CFS/GLDAS
 - Add the vegetation dependence to the ratio of the thermal and momentum roughness, Fixed a momentum roughness issue



Post - Processor Highlights

- Faster/less memory version
- **0.25 degree posted GRIB2 file instead of master GRIB1 file**
- Accumulation bucket changed from 12 hour to 6 hour between day 8 and day 10
- Add user requested fields
 - frozen precipitation fraction
 - ozone at 150, 200, 250, 300, 350, and 400 mb,
 - 2m dew point,
 - wind chill and heat index,
 - instantaneous precipitation type
 - membrane SLP in GDAS pgb files
 - Improved icing algorithm in post
 - Higher precision rh
- BUFR station list to newer NAM/GFS list



Parallel Status

- 3 hurricane seasons (2011, 2012, 2013) for downstream testing (2011 being done on Zeus). 2011 now in December; 2012 in August; 2013 done. 2011 and 2013 will go through December for use by MDL; 2012 will go through November 6. Retrospective parallels should be complete by September.
- Real time (2014) parallel running since January.
- Verification pages
 - <http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/prhw14> -2014
Realtime
 - <http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/prhs13> - Summer
2013 Completed
 - <http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/prhs12> - Summer
2012 Running
 - <http://www.emc.ncep.noaa.gov/gmb/wx24fy/vsdb/prhs11> - Summer
2011 running on Zeus



User Evaluations

- NHC is working with Vijay to evaluate selected storms from the 4 seasons run, including evaluation of downstream hurricane model runs
- MDL is using retrospective runs to flexibly spin up MOS statistics a season at a time
- Glenn will present a walkthrough of the EMC parallel validation website tomorrow (8/14) in the MEG meeting
- Glenn will continue to reach out to Centers and Regions and other customers to enable their evaluation of the EMC parallels before the start of the 30-day NCO parallel



GFS master and products

- NCEPPOST job will now post directly to quarter degree GRIB2 master files (rather than Gaussian grid GRIB1 master files).
- GDAS NCEPPOST step will now be same as GFS NCEPPOST step.
- Filenames and formats will change.
- GFS product jobs downstream of NCEPPOST will be implemented in their own vertical structures by the caretakers of those products

GDAS post and downstream files

NEXT vs. CURRENT

GRIB2

NEXT Grib2 Files (GDAS Post)	CURRENT Grib2 Files (GDAS Post)
gdas1.t\${cyc}z.master.grb2f\${fhr} (2 digit fhr)	gdas1.t\${cyc}.pgrbf\${fhr}.grib2 (1.0 deg lat/lon)
gdas1.t\${cyc}z.pgrb2.0p25.f\${fhr} (3 digit fhr)	
gdas1.t\${cyc}z.pgrb2.0p50.f\${fhr}	
gdas1.t\${cyc}z.pgrb2.1p00.f\${fhr}	
gdas1.t\${cyc}z.pgrb2.2p50.f\${fhr}	
gdas1.t\${cyc}z.pgrb2b.0p25.f\${fhr}	
gdas1.t\${cyc}z.pgrb2b.0p50.f\${fhr}	
gdas1.t\${cyc}z.pgrb2b.1p00.f\${fhr}	

GRIB1

NEXT Grib1 Files (GFS Post)	CURRENT Grib1 Files (GDAS Post)
gdas1.t\${cyc}z.pgrbq\${fhr} (0.25 deg)	gdas1.t\${cyc}.pgrbh\${fhr} (0.5 deg lat/lon)
gdas1.t\${cyc}z.pgrbf\${fhr} (1.00 deg)	gdas1.t\${cyc}.pgrbf\${fhr} (1.0 deg lat/lon)
gdas1.t\${cyc}z.pgrbf\${fhr}.2p5deg (2.50 deg)	

GFS post and downstream files

NEXT vs. CURRENT

GRIB2

NEXT Grib2 Files (GFS Post)	CURRENT Grib2 Files (GFS Post)
gfs.t\${cyc}z.master.grb2f\${fhr} (2 digit fhr)	gfs.t\${cyc}z.master.grb2f\${fhr} (Gaussian grid 1760 x 880)
gfs.t\${cyc}z.pgrb2.0p25.f\${fhr} (3 digit fhr)	gfs.t\${cyc}z.pgrb2f\${fhr} (0.5 deg lat/lon)
gfs.t\${cyc}z.pgrb2.0p50.f\${fhr}	gfs.t\${cyc}z.pgrb2bf\${fhr} (0.5 deg lat/lon)
gfs.t\${cyc}z.pgrb2.1p00.f\${fhr}	gfs.t\${cyc}z.pgrb2f\${fhr}.1p0deg
gfs.t\${cyc}z.pgrb2.2p50.f\${fhr}	gfs.t\${cyc}z.pgrb2f\${fhr}.2p5deg
gfs.t\${cyc}z.pgrb2b.0p25.f\${fhr}	gfs.t00z.special.grb2f\${fhr}
gfs.t\${cyc}z.pgrb2b.0p50.f\${fhr}	
gfs.t\${cyc}z.pgrb2b.1p00.f\${fhr}	

GRIB1

NEXT Grib1 Files (GFS Post)	CURRENT Grib1 Files (GFS Post)
gfs.t\${cyc}z.pgrbq\${fhr} (0.25 deg)	gfs.t\${cyc}z.master.grbf\${fhr} (Gaussian grid 1760 x 880)
gfs.t\${cyc}z.pgrbf\${fhr} (1.00 deg)	gfs.t\${cyc}z.pgrbf\${fhr} (1.00 deg)
gfs.t\${cyc}z.pgrbf\${fhr}.2p5deg (2.50 deg)	gfs.t\${cyc}z.pgrbf\${fhr}.2p5deg (2.50 deg)



EE vertical structures to be delivered by GCWMB



1. obsproc_global.v2.1.0
2. tropcy_qc_reloc.v5.0.0
3. emcsfc.v1.0.0
4. gsi.v5.0.0
5. enkf.v2.0.1
6. gsm.v12.0.0
7. ncep_post.v5.0.0
8. bufrsnd.v1.0.0
9. gfs_smartinit.v4.0.0
10. gfs_wafs.1.2.0

Vertical structure: obsproc_global.v2.1.0 (page 1/2)

Delivered by: Diane Stokes

Jobs and dependencies

- Jobs
 - JCDAS_DUMP, JCDAS_DUMP_POST, JCDAS_PREP1, JCDAS_PREP1_POST, JCDAS_PREP2, JCDAS_PREP2_POST
 - JGDAS_DUMP, JGDAS_DUMP_POST, JGDAS_PREP, JGDAS_PREP_POST
 - JGFS_DUMP, JGFS_DUMP_POST, JGFS_PREP, JGFS_PREP_POST
- Upstream jobs and data
 - INGEST (too many to list), JRTGSSTHR, JSEAICE_CONCENTRATION_ANALYSIS, JISNOW
 - JGFS_TROPCY_QC_RELOC or JGDAS_TROPCY_QC_RELOC
- Downstream jobs known
 - JGFS_EMCSFC_SFC_PREP, JGDAS_EMCSFC_SFC_PREP (gfs or gdas run)
 - JGFS_ANALYSIS, JGDAS_ANALYSIS_HIGH (gfs or gdas run)
 - JCFS_CDAS_DUMP (gdas run only)
 - JCDAS_FORECAST (cdas run only)
 - JCDAS2_V1_PREP (cdas run only)

Compute

- Nodes/threads/memory: Each job uses 1 node or less. Threads & mem vary.
- Wall time:
 - gfs/gdas dump->prep ~12 minutes (but varies). No change
 - cdas dump->prep2 was ~16 minutes. Now ~12 minutes

Vertical structure: obsproc_global.v2.1.0 (page 2/2)

Delivered by: Diane Stokes

Output

- Volume:
 - /com/gfs /prod/gfs. was ~10.5Gb, now ~11Gb. hpss about same
 - /com/gfs/prod/gdas . was ~22Gb, now ~23. hpss about same
 - /com/cdas/prod/cdas remains ~56Gb, no time to check hpss and /com/arkv
- Dissemination

The following will no longer be alerted for cyc=00,06,12,18:

- gfs.t\${cyc}z.sstgrb
 - gfs.t\${cyc}z.engicegrb
 - gfs.t\${cyc}z.snogrb
 - gfs.t\${cyc}z.trmm.tm00.bufr_d
 - gfs.t\${cyc}z.sptrmm.tm00.bufr_d
 - gdas1.t\${cyc}z.snogrb
 - gdas1.t\${cyc}z.snogrb_t574
 - gdas1.t\${cyc}z.sstgrb
 - gdas1.t\${cyc}z.engicegrb
 - gdas1.t\${cyc}z.engicegrb.grib2
 - gdas1.t\${cyc}z.engicegrb.grib2.idx
 - gdas1.t\${cyc}z.sstgrb.grib2
 - gdas1.t\${cyc}z.sstgrb.grib2.idx
 - gdas1.t\${cyc}z.snogrb.grib2
 - gdas1.t\${cyc}z.snogrb.grib2.idx
 - gdas.t\${cyc}z.trmm.tm00.bufr_d
 - gdas.t\${cyc}z.sptrmm.tm00.bufr_d
- Format and filename changes: None

Any exceptional build procedure or testing done outside of parallels: No build.
Offline tests were done on the J jobs submitted and they matched expected outcomes.

Vertical structure: tropcy_qc_reloc.v5.0.0
Delivered by: Qingfu Liu

Jobs and dependencies

- Jobs
 - JGDAS_TROPCY_QC_RELOC, JGFS_TROPCY_QC_RELOC
 - JNAM_TROPCY_QC_RELOC, JNDAS_TROPCY_QC, JNDAS_TROPCY_RELOC
- Upstream jobs and data
 - None (or previous cycle 03h, 06h and 09h forecast data)
- Downstream jobs
 - JGDAS_PREP, JGFS_PREP, JNAM_PREP, JNDAS_PREP

Compute

- Nodes/threads/memory
 - 3 nodes, 16 threads, 20GB memory
- Wall time
 - 5-8 minutes

Output

- Volume
 - 11GB
- Dissemination
 - Same as the current operational GFS/GDAS/NDAS analysis
- Format and filename changes
 - Tracker read grib2 data (instead of grib1 data)

Any exceptional build procedure or testing done outside of parallels: none

Vertical structure: emcsfc.v1.0.0 (page 1/2)

Delivered by: George Gayno

Jobs and dependencies

- Jobs
 - JGFS_EMCSFC_SFC_PREP
 - JGDAS_EMCSFC_SFC_PREP
- Upstream jobs and data
 - JGFS_DUMP and JGDAS_DUMP
 - IMS snow cover (4 km, grib2 version)
 - AFWA snow depth (16th mesh, grib 1 version)
 - IMS ice cover (4 km, grib2 version)
 - EMC/MMAB 5-minute ice concentration
- Downstream jobs
 - JGFS_ANALYSIS
 - JGDAS_ANALYSIS_HIGH, JGDAS_ENKF_SELECT_OBS, JGDAS_ENKF_INNOVATE_OBS

Compute

- Nodes/threads/memory:
 - Each job runs serially and uses 3 Gb memory.
- Wall time:
 - JGFS_EMCSFC_SFC_PREP runs in 90 seconds.
 - JGDAS_EMCSFC_SFC_PREP runs in 120 seconds.

Vertical structure: emcsfc.v1.0.0 (page 2/2)

Delivered by: George Gayno

Output

- Volume

- /com/gfs/prod/gfs/gfs.t\${cc}.seaice.5min.blend.grb (32 Mb per day)
- /com/gfs/prod/gfs/gfs.t\${cc}.snogrib_t1534.3072.1536 (22 Mb per day)
- /com/gfs/prod/gdas/gdas1.t\${cc}.seaice.5min.blend.grb (32 Mb per day)
- /com/gfs/prod/gdas/gdas1.t\${cc}_snogrib_t1534.3072.1536 (22 Mb per day)
- /com/gfs/prod/gdas/gdas1.t\${cc}_snogrib_t574.1152.576 (3.2 Mb per day)

- Dissemination

- All output files are only used by GFS and GDAS. There are no other NCEP users. There are no external users.

- Format and filename changes:

- Snow files will have the JCAP value and I/J dimensions of grid in the file name. Current OPS snow files have only the JCAP value in the file name.

Any exceptional build procedure or testing done outside of parallels:

- Offline tests were done on the J jobs submitted and they matched expected outcomes.

Vertical structure: gsi.v5.0.0 (page 1/2)

Delivered by: Russ Treadon

Jobs and dependencies

- Jobs
 - JGDAS_ANALYSIS_HIGH, JGFS_ANALYSIS
 - Removed JGDAS_ANGUPDATE
- Upstream jobs and data
 - JGDAS_DUMP, JGDAS_PREP,
 - JGFS_DUMP, JGFS_PREP, JGDAS_EMCSFC_SFC_PREP, JGFS_EMCSFC_SFC_PREP
- Known Downstream jobs
 - JGDAS_FORECAST_HIGH, JGFS_FORECAST_HIGH, JGDAS_ENKF_INFLATE_RECENTER
 - All post-processing jobs as in model

Compute

- Nodes/threads/memory:
 - JGDAS_ANALYSIS_HIGH
 - Current operations: 224 tasks, 28 nodes(ptile=8), 2 threads/task
 - Proposed package: 360 tasks, 90 nodes (ptile=4), 4 threads/task
 - JGDAS_ANALYSIS_HIGH
 - Current operations: 200 tasks, 25 nodes(ptile=8), 2 threads/task
 - Proposed package: 360 tasks, 90 nodes (ptile=4), 4 threads/task
- Wall time:
 - JGDAS_ANALYSIS_HIGH
 - Current operations: 36 minutes
 - Proposed package: 35 minutes
 - JGFS_ANALYSIS_HIGH
 - Current operations: 23 minutes
 - Proposed package: 24 minutes

Vertical structure: gsi.v5.0.0 (page 2/2)

Delivered by: Russ Treadon

Output

- Volume:
 - JGDAS_ANALYSIS_HIGH
 - Current operations: 10.15 Gbs/day
 - Proposed Package: 34.29 Gbs/day
 - JGFS_ANALYSIS_HIGH
 - Current operations: 2.93 Gbs/day
 - Proposed Package: 16.67 Gbs/day
- Dissemination
 - Same as current GFS/GDAS
- Format and filename changes: None

Any exceptional build procedure or testing done outside of parallels:
Simple build instructions in release notes. Offline tests were done on the J jobs submitted and they matched expected outcomes.

Vertical structure: enkf.v2.0.1 (page 1/3)

Delivered by: Russ Treadon

Jobs and dependencies

- Jobs
 - JGDAS_ENKF_FCST, JGDAS_ENKF_INFLATE_RECENTER, JGDAS_ENKF_INNOVATE_OBS
 - JGDAS_ENKF_ENKF_POST, JGDAS_ENKF_SELECT_OBS, JGDAS_ENKF_UPDATE
- Upstream jobs and data
 - JGDAS_PREP, JGDAS_EMCSFC_SFC_PREP, JGDAS_ANALYSIS_HIGH
- Known Downstream jobs
 - JGDAS_ANALYSIS_HIGH, JGFS_ANALYSIS_HIGH

Compute

- Nodes/threads/memory:
 - JGDAS_ENKF_SELECT_OBS
 - Current operations: 32 tasks, 1 nodes, 2 threads/task
 - Proposed package: 112 tasks, 7 nodes , 1 threads/task
 - JGDAS_ENKF_INNOVATE_OBS
 - Note: run 10 concurrent copies of JGDAS_ENKF_INNOVATE_OBS. Each submission processes 10 ensemble members. Compute resources and run times below are for a single instance of the job
 - Current operations: 32 tasks, 1 nodes, 1 threads/task
 - Proposed package: 112 tasks, 7 nodes , 1 threads/task
 - JGDAS_ENKF_UPDATE
 - Current operations: 112 tasks, 14 nodes, 2 threads/task
 - Proposed package: 330 tasks, 55 nodes , 2 threads/task
 - JGDAS_ENKF_INFLATE_RECENTER
 - Current operations: 80 tasks, 5 nodes, 16 threads for global_chgres
 - Proposed package: 80 tasks, 20 nodes ,32 threads for global_chgres
 - JGDAS_ENKF_FCST
 - Note: run 10 concurrent copies of JGDAS_ENKF_INNOVATE_OBS. Each submission processes 10 ensemble members. Compute resources and run times below are for a single instance of the job
 - Current operations: 32 tasks, 4 nodes, 4 threads/task
 - Proposed package: 160 tasks, 20 nodes , 2 threads/task
 - JGDAS_ENKF_POST
 - Current operations: 6 tasks, 1 nodes, 1 threads/task
 - Proposed package: 80 tasks, 5 nodes , 1 threads/task

Vertical structure: enkf.v2.0.1 (page 2/3)

Delivered by: Russ Treadon

- Wall time:

- JGDAS_ENKF_SELECT_OBS
 - Current operations: 4.5 minutes
 - Proposed package: 4.0 minutes
- JGDAS_ENKF_INNOVATE_OBS
 - Note: run 10 concurrent copies of JGDAS_ENKF_INNOVATE_OBS. Each submission processes 10 ensemble members. Compute resources and run times below are for a single instance of the job
 - Current operations: 20.5 minutes
 - Proposed package: 21.0 minutes
- JGDAS_ENKF_UPDATE
 - Current operations: 14.0 minutes
 - Proposed package: 14.0 minutes
- JGDAS_ENKF_INFLATE_RECENTER
 - Current operations: 4.0 minutes
 - Proposed package: 9.0 minutes
- JGDAS_ENKF_FCST
 - Note: run 10 concurrent copies of JGDAS_ENKF_INNOVATE_OBS. Each submission processes 10 ensemble members. Compute resources and run times below are for a single instance of the job
 - Current operations: 21.0 minutes
 - Proposed package: 21.0 minutes
- JGDAS_ENKF_POST
 - Current operations: 3.0 minutes
 - Proposed package: 2.0 minutes

Vertical structure: enkf.v2.0.1 (page 3/3)

Delivered by: Russ Treadon

Output

- Volume:
 - Current Operations: 378 Gb/day
 - Proposed package: 1478 Gb/day
- Dissemination
 - Same as current GFS ENKF
- Format and filename changes: None

Any exceptional build procedure or testing done outside of parallels:
Simple build instructions in release notes. Offline tests were done on the J jobs submitted and they matched expected outcomes.

Vertical structure: gsm.v12.0.0 (page 1/2)

Delivered by: Fanglin Yang

Jobs and dependencies

- Jobs
 - JGDAS_FORECAST_HIGH JGFS_FORECAST_HIGH JGFS_FORECAST_LOW
- Upstream jobs and data
 - JGDAS_ANALYSIS_HIGH, JGFS_ANALYSIS
- Downstream jobs
 - JGDAS_NCEPPOST, JGFS_NCEPPOST

Compute

- Nodes/threads/memory:
 - JGDAS_FORECAST_HIGH
 - operation: 145 tasks, ptile(threads)=4, 4tasks/node, 36 nodes
 - proposed : 432 tasks, ptile(threads)=4, 4tasks/node, 108 nodes
 - JGFS_FORECAST_HIGH
 - current : 133 tasks, ptile(threads)=4, 4tasks/node, 34 nodes,
 - proposed : 432 tasks, ptile(threads)=4, 4tasks/node, 108 nodes
 - JGFS_FORECAST_LOW
 - current : 64 tasks, ptile(threads)=8, 2tasks/node, 32 nodes
 - proposed : 216 tasks, ptile(threads)=8, 2tasks/node, 108 nodes

Vertical structure: gsm.v12.0.0 (page 2/2)

Delivered by: Fanglin Yang

- Walltime

- JGDAS_FORECAST_HIGH :
current 3.6 minutes, proposed 3.6 minutes
- JGFS_FORECAST_HIGH :
current: 8.3 min/day for 8 days, total 66.4 minutes
proposed: 8.3 min/day for 10 days, total 83 minutes
- JGFS_FORECAST_LOW :
current: 1.4 min/day for 8 days, 2 minutes for chgres, total 14.0 minutes
proposed: 2.0 min/day for 6 days, 3 minutes for chgres, total 15 minutes

Output

- Volume (for each cycle)

- /com/gfs/prod/gfs.*: including sf, bf and sfluxgrb output, 3-hourly for HIGH, and 12-hourly for LOW
Current: 67 GB, proposed: 420 GB
- /com/gfs/prod/gdas.*: including sf, bf and sfluxgrb output, hourly output
Current: 13 GB, proposed: 70 GB

- Dissemination: No change

- Format and filename changes: None

Any exceptional build procedure or testing done outside of parallels:
build instructions in release notes. Offline tests were done using drivers to call
JJOBBS. Results match the parallels.

Vertical structure: *ncep_post.v5.0.0*
Delivered by: *DaNa Carlis/Hui-ya Chuang*

Jobs and dependencies

- Jobs
 - JGFS_NCEPPOST, JGDAS_NCEPPOST
- Upstream jobs and data
 - JGFS_FORECAST_HIGH, JGFS_FORECAST_LOW, JGDAS_FORECAST_HIGH
- Downstream jobs
 - Many GFS product jobs

Compute

- Nodes/threads/memory:
 - GFS and GDAS Post: 4 nodes/32 tasks/2 threads/50GB
- Wall time:
 - Parallel: GFS (2min 10sec for single 0.25 deg grib2 file, total of 94 files so ~203 min), GDAS (3min 20sec for single 0.25 deg grib2 file, total of 11 files so ~36 min)

Output

- Volume:
 - /com/gfs/prod/gfs.\${PDY}/gfs.t\${cyc}z.master.grb2f\${fhr} (**36GB per cycle**, includes anl, F00-F240 (3hrly), and F240-F384(12hrly))
 - /com/gfs/prod/gdas.\${PDY}/gdas1.t\${cyc}z.pgrbh\${fhr} (Operational GDAS master file)
 - GDAS master in parallel is called gdas1.t\${cyc}z.master.grb2f\${fhr} **2.2GB per cycle** and includes hourly grib2 files anl/F00-F09)
- Dissemination:
 - Same as current operational GFS/GDAS
- Format and filename changes:
 - See earlier slides

Any exceptional build procedure or testing done outside of parallels: None

Vertical structure: bufrsnd.v1.0.0

Delivered by: *DaNa Carlis*

Jobs and dependencies

- Jobs
 - JGFS_POSTSND
- Upstream jobs and data
 - JGFS_FORECAST_HIGH
- Downstream jobs
 - NONE

Compute

- Nodes/threads/memory: 2 nodes/8 threads/22GB
- Wall time: 108 min

Output

- Volume:
 - /com/gfs/prod/gfs.\${PDY}/bufr.t\${cyc}z/bufr3.\${STID}.\${CDATE} (892MB per day)
 - /com/gfs/prod/gfs.\${PDY}/gfs.t\${cyc}z.bufrsnd.tar.gz (220MB per day)
 - /com/gfs/prod/gfs.\${PDY}/nawips/gfs.\${CDATE}.(snd/sfc) (450MB per day)
- Dissemination:
 - Same as current operational GFS
- Format and filename changes
 - Added 204 new stations based on User requests over the last 6-7 years

Any exceptional build procedure or testing done outside of parallels:

- Offline testing of scripts has been completed with expected outcome.

Vertical structure: gfs_smartinit.v4.0.0
Delivered by: *DaNa Carlis*

Jobs and dependencies

- Jobs
 - JGFS_SMINIT
- Upstream jobs and data
 - JGFS_FORECAST_HIGH
- Downstream jobs
 - NONE

Compute

- Nodes/threads/memory: 8 nodes/64 tasks/2 threads/45GB
- Wall time: 130 min (F00-12 at 1hr intervals and F12-192 at 3hr intervals)

Output

- Volume:
 - /com/gfs/prod/gfs.\${PDY}/gfs.t\${cyc}.smartguam\${fhr}.tm00.grib2 (37MB per day)
 - /com/gfs/prod/gfs.\${PDY}/gfs.t\${cyc}.smartguam\${fhr}.tm00 (110MB per day)
- Dissemination:
 - Same as current operational GFS
- Format and filename changes
 - Added 204 new stations based on User requests over the last 6-7 years

Any exceptional build procedure or testing done outside of parallels:

- Offline testing of scripts has been completed with expected outcome.